

UW- STEVENS POINT NORTHERN AQUACULTURE DEMONSTRATION FACILITY

WALLEYE PROJECT- SUMMER 2005

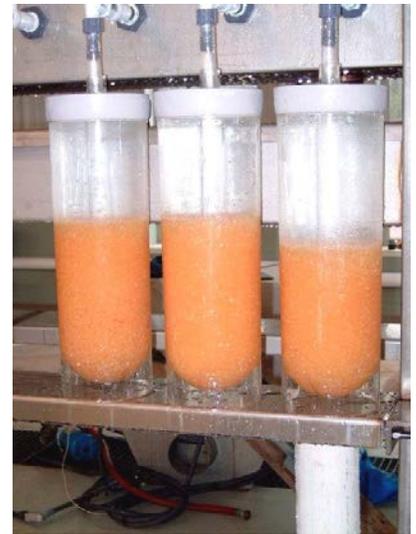
Introduction

During the summer of 2005, the UW Stevens Point Northern Aquaculture Demonstration Facility (NADF) had the opportunity to cooperatively work with the Lac Courte Oreilles Tribal Fisheries Program (LCO) raising approximately 12,000 extended growth walleyes at a cost of \$0.66 per fish for the tribes lake stocking program. The information presented in this case study describes the methods used from beginning to end in a “cookbook” style how the NADF raised the walleyes in two half acre outdoor earthen ponds utilizing organic fertilizers and forage minnows.

Methods

Adult male and female walleye were collected by the LCO fisheries staff using fyke nets set in lakes around April. Eggs are stripped by hand from female walleye into a plastic container and milt is added from several males utilizing the dry method. More than one male was utilized for several reasons; milt from single male may not be capable of fertilizing eggs, and for maintaining genetic diversity. After eggs and milt are in the pan, water was added and the combination stirred with a soft brush or feather. Stirring continues for several minutes and a slurry of bentonite clay is added to the mixture. Continue stirring and adding some fresh water for several minutes. The egg clay mixture is then be rinsed off with fresh water and placed into a larger bucket of fresh oxygenated water. Water hardened eggs were transported to the NADF for incubation in the bell jar incubation system located at the facility.

Approximately 300,000 eggs were placed in McDonald style egg jars for rearing on April 19, 2005. Water temperature was maintained between 48-50 degree F throughout incubation, temperature was increased during hatch out to aid in hatching. Water flow through jars was approximately 1.0 gpm and then increased to 1.5 gpm once eggs became eyed. Dead eggs were removed daily from the hatching jars through siphoning. A chicken waterer with a 15 minute (1,200 mg/l) formalin drip was used daily after egg eyeup to control fungus. Formalin treatments were discontinued nearing egg hatchout. Fry hatching began on May 2 and lasted several days. Strong swimming fry were stocked into prepared NADF 17,600 sq.ft (0.4 acre) outdoor earthen ponds 1 and 2 at the rate of approximately 120,000 fry per pond between May 4 and May 9, 2005. Ponds were filled partway and prepared a week in advance of filling with 300 pounds of alfalfa meal fertilizer and had good plankton blooms of appropriate sized plankton for walleye fry. A total of 1,500 pounds of alfalfa



meal costing \$240.00 was added during May-July to continue plankton blooms. Filled ponds had an average depth of three (3) feet, approximately 391,000 gallons.

Warmer than average spring temperatures in 2005 resulted in early spawning and hatching of walleyes in northern Wisconsin. Typically, ponds in northern Wisconsin are not stocked with walleye fry until after May 15 based on our experience due to possibility of cold weather and pond freeze out. 2005 was no exception, immediately following stocking of fry into the outdoor ponds, the temperature dropped to 30 degree F for several days with little sun. Pond temperatures plummeted from 60 degrees F to 30 degrees F in two days. It continued to be rainy and cold for several weeks before the temperature stabilized and started to return to normal.



Walleye fry were observed around edges of the pond 2 in daylight and at night with lights the end of May. Pond temperature was in the high 50's and low 60's for the latter part of May. Plankton populations were low. Oxygen levels were 7-9 ppm. No walleye were observed in pond 3 during May. Pond temperatures increased to 70-84 degrees F in June and plankton populations increased. Airlifts were employed in each pond for aeration and circulation. Ponds were sampled with small mesh seine

on June 7. Only pond #2 held walleye, which averaged 0.85" (21.5mm). Ponds were sampled again on June 15. Only pond #2 held walleye, which averaged 1.15" (29.3mm). Approximately, 5,000 fingerlings were transferred to Pond #3 from Pond #2 on June 15. Ponds 2 and 3 were sampled on June 29, walleye fingerlings averaged 2.37" (60.2mm) and 2.47" (62.7mm) respectively.



Walleyes from both ponds were sampled on a weekly basis to assess length, weight, and fish condition. Length and weights were very uniform throughout the summer for both ponds. Fish condition was excellent. Ponds were monitored daily for temperature and oxygen throughout the summer. Lowest oxygen levels were recorded in August at 5.7 ppm, highest oxygen level recorded was 10.1 ppm. No problems related to oxygen or temperature was observed.



Ponds were stocked periodically with a total of 170 gallons (1,360 lbs) of forage minnows of various sizes ranging < 1" to 2" from June 30 through August 31. Ratio of forage minnows to walleye was approximately 3:1. Total cost of minnows was \$6,010.00, which was paid by the LCO Fisheries Department.



Results

Harvest of walleyes from the ponds began on August 30 and continued through September 8. Ponds were drawn down slowly through the use of gate valves and dam boards located in the concrete funnel structure at the rear of the ponds. Fish were collected and held in the external concrete collecting kettle with fresh water and aeration. Approximately, 11,744 extended growth walleyes weighing 511 pounds were harvested from the two ponds and loaded onto an LCO fish distribution truck

The harvested walleyes averaged 6 inches in length and 23/pound. Length distribution was from 4.5" to 8.4" in sampled fish. No significant losses were recorded during harvest. The walleyes were stocked by LCO Fisheries Department into local lakes for conservation purposes. Total estimated cost to produce the fish was \$7,700 (0.66 per fish) which includes forage, fertilizer, labor, electrical, and miscellaneous expenses.



Questions or comments regarding this project can be directed to Gregory Fischer, NADF Facility Director, at 715-779-3461 or email gfischer@uwsp.edu